

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions and listings of claims in the above-referenced application:

1 1. (Currently amended) An integrated circuit (IC) chip comprising:
2 a square-wave audio signal generator adapted to generate [a] square-wave
3 signal at an audio frequency;
4 a counter adapted to digitally count from zero to a predetermined number;
5 a register adapted to hold a volume control value;
6 a comparator connected to said counter and connected to said register, said
7 comparator adapted to compare a present count from the counter with the volume
8 control value to produce a modulation signal; and
9 an AND gate connected to said square-wave signal generator and connected to
10 said comparator, said AND gate adapted to combine, in a logical AND operation, the
11 square-wave signal with the modulation signal to generate an output signal that is on,
12 when both the square-wave signal and the modulation signal are on, and off when one
13 or both of the square-wave signal and the modulation signal are off, the output signal
14 from the AND gate coupled directly to a single pin of the IC, the single pin being
15 further coupled to an amplifier subsystem via a filter.

1 2. (Previously presented) The IC recited in claim 1 wherein said
2 square-wave audio signal generator generates a square-wave audio signal having a
3 frequency within a range from 500 Hz to five KHz.

1 3. (Original) The IC recited in claim 1 wherein said counter is a 5-bit
2 counter adapted to count from 0 to 31.

1 4. (Original) The IC recited in claim 1 wherein said counter operates
2 at a counter frequency on the order of MHz.

1 5. (Original) The IC recited in claim 1 wherein said register is a pulse
2 width register having five bits.

1 6. (Original) The IC recited in claim 1 wherein the integrated circuit
2 chip is an application specific integrated circuit chip (ASIC).

1 7. (Currently amended) A method of generating a modulated square-
2 wave audio signal, the method comprising:

3 generating a square-wave audio signal having a first audio frequency;
4 repeatedly counting a predetermined range of values generating count signals;
5 modulating the count signals with a volume control signal resulting in a
6 modulation signal;

7 modulating the square-wave signal with the modulation signal to generate a
8 modulated square-wave signal that is on when both the square wave signal and the
9 modulation signal are on and off when one or both of the square-wave signal and the
10 modulation signal are off; and

11 applying the modulated square-wave signal via a single conductor at the
12 interface of an integrated circuit to an amplifier subsystem.

1 8. (Original) The method recited in claim 7 wherein the first audio
2 frequency is within a range from 500 Hz to five KHz.

1 9. (Previously presented) The method recited in claim 7 wherein the
2 repeatedly counting step counts from 0 to 31.

1 10. (Previously presented) The method recited in claim 7 wherein the
2 repeatedly counting step operates at a counter frequency on the order of MHz.

1 11. (Previously presented) The method recited in claim 7 wherein the
2 volume control signal is set at a value within a range counted by the repeatedly
3 counting step.

1 12. (Canceled)

1 13. (Currently amended) An apparatus comprising:
2 an integrated circuit (IC) ~~chip~~ adapted to generate a modulated square-wave
3 signal;

4 an amplifier subsystem connected to said IC ~~chip~~ via a single pin associated
5 with each of the IC and the amplifier subsystem, respectively, the amplifier subsystem
6 adapted to filter and amplify the modulated square-wave signal, wherein said IC ~~chip~~
7 comprises:

8 a square-wave signal generator adapted to generate a square-wave
9 signal at an audio frequency;

10 a counter adapted to digitally count from zero to a predetermined
11 number;

12 a register adapted to hold a volume control value;

13 a comparator connected to said counter and connected to said register,
14 said comparator adapted to compare a present count from the counter with the volume
15 control value to produce a modulation signal; and

16 an AND gate connected to said square-wave signal generator and
17 connected to said comparator, said AND gate adapted to combine, in a logical
18 AND operation, the square-wave signal with the modulation signal to generate
19 a modulated output signal that is on, when both the square wave signal and the
20 modulation signal are on, and off when one or both of the square-wave signal
21 and the modulation signal are off.

1 14. (Previously presented) The apparatus recited in claim 13 wherein
2 said square-wave signal generator generates a square-wave signal having a frequency
3 within a range from 500 Hz to five KHz.

1 15. (Original) The apparatus recited in claim 13 wherein said counter
2 is a 5-bit counter adapted to count from 0 to 31.

1 16. (Original) The apparatus recited in claim 13 wherein said counter
2 operates at a counter frequency on the order of MHz.

1 17. (Original) The apparatus recited in claim 13 wherein said register
2 is a pulse width register having five bits.

1 18. (Original) The apparatus recited in claim 13 wherein said
2 amplifier subsystem comprises a resistor-capacitor (RC) filter connected to a fixed
3 gain amplifier.